Address encoding system for portable battery - operated devices

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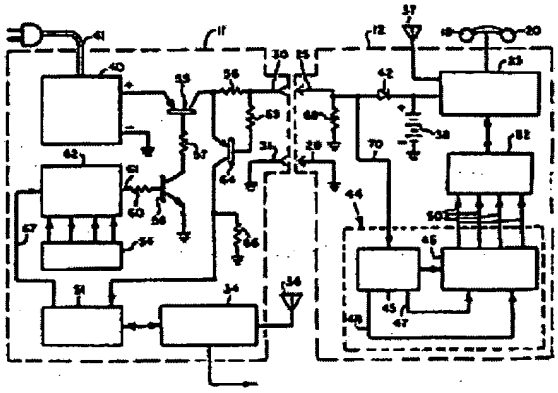
A two-way radio communications system includes a battery-operated portable unit and a base unit having a receptacle for receiving the portable unit when the portable unit is not in use. A security circuit in each unit allows communication with other units only upon the reception of an address code corresponding to an address code stored in the unit. When the portable unit is seated in the base unit receptacle, the batteries of the portable unit are recharged by current supplied by the base unit. At the same time, the address code of the base unit is entered into the portable unit by encoding circuitry which modulates the battery charging current in accordance with the address code. Circuitry within the portable unit demodulates the charging current to recover the address code for storage in the security circuit of the portable unit. The invention can also be used in systems where data other than address codes must be sent to a unit being charged.



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PATENT ABSTRACTS OF JAPAN, vol. 6, no. 205 (E-136)[1083], 16th October 1982 & JP-A-57 112 145

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Description

The present invention relates generally to methods and systems for providing a portable communication unit with a predetermined identification (ID) code to enable it to communicate with a base unit having a corresponding ID code, and more particularly to a method and system for providing a portable communication unit with an ID code through modulation of battery charging current.

Presently, there exist a variety of communication systems in which one or more battery operated portable units communicate with a central base station unit. Examples of such systems include portable telephone systems, garage door openers and remote computer terminals which communicate with a master computer. In such systems, and particularly in those wherein a number of portable units communicate with a base unit by means of radio signals, it is desirable that each portable unit communicates only with a given base unit, and similarly that each base unit communicates only with a specified group of portable units. This is particularly true where a number of radio communication systems operate on a shared frequency and communications are intended for only specified ones of the many portable units tuned to the common frequency. Numerous systems for providing such limitations have been developed and typically involve storing an electronic ID code in both the base unit and the portable units and then checking for correspondence between the codes thus stored prior to establishing a communications link.

With such communications systems, it is necessary to encode each portable unit of the system so that the codes stored therein correspond to that stored in the system base station unit. A variety of code storage techniques have been developed including providing the units with hard-wired circuitry for generating a code, providing each unit with a removable programmable ID storage element or "code plug", or providing each unit with memory circuitry into which a user manually enters a code prior to use.

Each of these methods has drawbacks which adversely affect the effectiveness of the communication system. For example, the use of hard-wired circuitry to generate a code requires each unit to be individually wired in a unique manner which greatly increases manufacturing costs. Similarly, the use of code plugs requires each code plug to be uniquely programmed prior to its installation in a communication unit. When manual programming of each unit is provided, generally only a relatively few user-selected codes are available in order to avoid excessive manufacturing costs. Accordingly, the provision of relatively few available ID codes increases the likelihood that other users could accidentally or intentionally select the same codes, thereby compromising the security of the communication system. A further drawback of such systems is that when it is desired to purchase either a new base unit or portable unit for use in an existing system, it is necessary for either the manufacturer or the purchaser to assure that the unit obtained contains the proper code for allowing communication with other units of the system.

In this connection, so called 'cordless' telephones are known, see for example Patent Abstracts of Japan, vol 6, no 205 (E-136) [1083], 16th October 1982, in which a hand set having a chargeable battery is detachable from a main body having contacts adapted to co-operate with charging contacts on the main body, as is the dedication of a handset to a base unit by means of an identifying code as may be seen for example from European Patent Application EP-A-0 074 940 wherein a fixed code is employed so that each base unit and handset form a unique pair. Furthermore, US Patent No. 4,422,071 discloses a battery operated portable unit which receives code information externally programmed by an operator by way of a physical connection to a base unit.

The present invention is directed to a method and apparatus for automatically transferring an ID code from a given base station unit to any compatible portable unit for storage therein when the portable unit is conductively mated with the base unit such as during battery charging. The system has the advantage that any compatible portable unit may thus be used with any base unit without the need for manually altering circuit components or manually programming the portable unit. Since it is necessary to mate each intended portable unit with the base station prior to allowing remote communication between the units, security of the system is maintained. Furthermore, the system provides a great deal of flexibility since a user may program as many or as few portable units as is necessary to meet his needs at any given moment.

In one such system in which a base unit provides an ID code to a portable unit, a third conductor, dedicated to transferring ID code information, was provided in addition to the two conductors needed to charge the battery of the portable battery. This system is described in the copending application of George C. Hawkins, entitled "Portable Telephone ID Code Transfer System", EP Patent No. 0165294 filed 19 November 1984, and assigned to the assignee of the present invention. The present invention avoids the necessity for such an additional conductor since the present system relies on modulation of battery charging

current in order to transfer ID code information. Elimination of the third conductor reduces manufacturing costs and offers greater flexibility since compatibility with standard connectors presently in use can be retained.

In view of the foregoing it is a general object of the present invention to provide a new and improved electronic system wherein a base station Unit provides ID code information to associated portable units without the need for modifying existing battery charging interconnections.

Summary of the Invention

The present invention is directed to a communication system, comprising:

a battery operated portable unit including a rechargeable battery;

a base station unit selectively in communication with said battery operated portable unit and comprising a charging apparatus having a receptacle for selectively receiving said battery operated portable unit and having a source of battery charging current said charging apparatus and battery operated portable unit being separable;

contacts and on said battery operated portable unit and within said receptacle for establishing electrical communication between said battery and said source of battery charging current;

said system characterized by:

means in at least one of said base station unit and said battery operated portable unit for sending information signals by modulated charging current between said battery operated portable unit and said base station unit via said battery charging electrical communication contacts on said battery operated portable unit and said receptacle; and

means in another of said base station unit and said battery operated portable unit for retrieving said sent information signals and for utilization thereof.

A system utilizing this invention could also be one wherein other types of data are required to be sent to the portable unit during charging, either following or without an ID code transmission.

Brief Description of the Drawings

Fig. 1 is a perspective view of a portable telephone system incorporating a security address encoding system constructed in accordance with the invention.

Fig. 2 is a cross-sectional view of the unit illustrated in Fig. 1 taken along line 2-2 thereof showing details of the battery charging electrical contact arrangement between the portable and base station units.

Figure 3 is an electrical block diagram of the portable telephone system illustrated in Figure 1 useful in understanding the operation of the security address encoding system.

Description of the Preferred Embodiment

Referring to the drawings, and particularly to Figure 1, a cordless telephone communication system 10 is illustrated. As shown, the system includes a base station unit 11 and a battery-operated encodable portable unit 12, separable from one another, and individually contained within separate housings 14 and 15, respectively, fashioned from molded plastic or similar such material. The upper surface 16 of the base station unit 11 includes a shallow depression or recess 17 conforming generally to the shape of the portable unit thereby allowing the portable to be contained in the recess while not in use. The portable unit is fashioned in the form of a telephone handset and thus includes a mouthpiece 18 and earpiece 20. To allow use within standard telephone system networks, the under surface 21 of the portable unit includes a touch-tone pad 22 for generating standard telephone system touch-tones.

In use, the base station unit 11 is installed at a fixed location and is connected to a standard telephone system network by means of a cable 24 and conventional telephone line connectors (not shown). When installed in this manner, access to the telephone system is provided whereby the base station can accept signals from and provide signals to other units connected with the telephone system network. The cordless telephone system thus installed provides standard telephone service to a user carrying the portable unit without the need for interconnecting wires. Accordingly, a great degree of mobility is provided to the user of the cordless telephone system. To allow such mobility, the base and portable units each include a duplex transceiver and antenna which together provide a wireless communication link between the two units.

In order to supply the electrical power needed to energize the circuitry of the portable unit during portable operation, the unit is provided with a battery of conventional construction. Preferably, the battery may be recharged through application of a suitable DC charging current. Such a charging current may be applied to the portable unit by means of a pair of electrical contacts 25 and 26. Referring to Figure 2, contacts 25 and 26 are seen to be spaced apart from one another and to project through suitable apertures 27 and 28 in the housing to provide electrical communication through the housing to the interior region thereof. Typically, the contacts are fashioned from steel, copper or similar conductive material and may be plated with some suitable non-reactive material, such as gold, in or-

der to preclude tarnishing of the contact surfaces. The base station unit is similarly provided with a pair of spring-loaded contacts 30 and 31 along an interior wall 32 of the recess 17, positioned as to engage contacts 25 and 26 when the portable is inserted in the recess. The base unit contacts 30 and 31 are constructed of materials similar to those used in the portable unit and are arranged so as to positively engage the contacts of the portable unit, thereby assuring a low resistance electrical connection between the portable unit and the base station unit.

In order to reduce undesirable interference between units which may be operating on the same frequency, as well as in order to provide a degree of security to communications between base station unit and its associated portable units, the cordless telephone communication system is arranged so that electrical identification (ID) codes or security addresses stored within both the base station and portable units are compared and found to have proper correspondence to one another prior to establishing a communication link between the units. To this end, the base station unit is provided with some form of read only memory (ROM) in which a previously selected ID code or security address, preferably unique to that base station unit, is stored. Examples of such ROM's include hardwired circuitry, fusible link code plugs, or any of a variety of similar data storage devices. When properly actuated, such devices produce a unique combination of logic HIGH and logic LOW signals at their output terminals in accordance with the ID code stored within.

To allow the portable unit to properly identify itself to the base station prior to establishing the communication link, the portable includes suitable memory circuitry for storing an address code which corresponds to that of the base station unit with which it is desired to establish communication. In use, the code stored within the portable unit is retrieved from memory and is transmitted to the base station unit whereupon, in known manner, it is compared with the code stored in the base station unit. If proper correspondence between the codes exists, the base station, in accordance with conventional practice, return transmits an appropriate "hand shake" signal to the portable to establish the communication link, thereby permitting subsequent information transfer between the units. The operation of this security system is described in detail in the previously identified copending application of Hawkins, serial No. 558,738.

In security address communication systems it is necessary that corresponding address codes be properly stored within the base unit and each portable unit used therewith. The present invention is directed to an encoding system whereby the ID code stored within the base unit is automatically transferred for storage in the portable unit when the portable unit is electrically mated with the base station unit during the battery charging cycle. When the portable is encoded in this manner, it is not necessary to manually enter a code into its memory. Furthermore, since the ID data transfer takes place over existing charging circuit conductors, no additional wiring between the base station and portable unit is required.

Figure 3 shows in greater detail the configuration of a security address encoding system constructed in accordance with the invention. Referring to the Figure, the base station and portable units 11 and 12 contain transceiver circuits 34, 35 respectively and antennas 36 and 37 respectively, which, in a known manner, provide wireless communication between the units.

As previously developed, the portable unit 12 includes within its housing 15 a rechargeable battery 38 for supplying electrical energy during portable operation of the unit. In order to recharge the battery, the base station includes a battery charge current source 40 of known construction which serves to convert conventional 120 volt 60 Hz. electrical energy supplied through line 41 to a filtered and regulated unidirectional current suitable for application to the battery 38. The battery charge current is applied to the portable by means of the previously described battery charging contacts 25, 26, 30 and 31 included in both the base station and portable units.

Within the portable unit 12, the negative polarity battery charging contact 26 is connected to circuit ground. The positive polarity battery charge current contact 25 is connected to the anode of forward-biased diode 42, the cathode of which is connected to the positive polarity terminal of the rechargeable battery 38. Charge current flows when voltage at contact 25 is greater than the battery voltage. If the contact voltage is less than the battery voltage, the diode is reverse-biased to prevent reverse current flow.

As is further illustrated in Figure 3, the portable unit 12 includes an encodable memory 44 which is capable of accepting and storing an incoming address code for subsequent retrieval and further use by the portable unit. As illustrated, the memory 44 includes an input circuit 45 which, when provided with serial input data, suitably conditions the data for application to an address code register 46 for storage therein. The address code register 46 accepts data from the input circuit 45 and stores the data until a suitable reset signal, generated by the input circuit and applied to a reset line 47, is received. Similarly, a transfer signal, generated by the input circuit 45 and applied to the address code register 46 through a transfer line 48, causes

data currently stored in the address code register to appear in binary form at the output lines 50 of the register.

In order to perform the necessary comparison between the codes stored in the base and hand-held units, and to control other functions of the units, the base and the portable units contain microprocessors 51 and 52 respectively.

In order to transfer the base unit address code to the portable for storage therein, the base unit, in accordance with the invention, is provided with means for modulating the battery charging current it supplies to the portable. Such means take the farm of circuitry for uniquely periodically interrupting charge current flow in accordance with the code stored in a ROM 54 included in the base unit. In addition, such means include means for sensing the flow of charge current in order to produce a signal for enabling the modulation circuitry.

As further illustrated in Figure 3, the base unit charging current modulation circuitry includes a PNP transistor 55, the emitter of which is connected to the positive polarity output terminal of the battery charge current source 40 and the collector of which is connected through a resistor 56 to the positive polarity battery charging contact 30. The base of transistor 55 is conncted through a resistor 57 to the collector of an NPN transistor 58 the emitter of which is connected directly to circuit ground. The base of transistor 58 is connected through a resistor 60 to the data output terminal 61 of an address code generator 62, which, in a manner to be described, produces an information carrying logic word conforming to the code stored in ROM 54. A logic HIGH signal appearing at terminal 61 biases transistor 58 on into saturation, thereby grounding the base of transistor 55 through resistor 57 with the effect that transistor 55 is biased into conduction, allowing battery charge current to pass to the portable unit. A logic LOW appearing at the data output terminal 61 biases transistors 58 and 55 off, thereby interrupting the flow of charging current to the portable unit.

The current sensing means, which detect the passage of charging current to the portable and provide an enable signal in response thereto, include a second PNP transistor 64. The emitter of this transistor is connected to the collector of transistor 55. The collector of transistor 64 is connected to an input terminal of the base microprocessor 51. The base of transistor 64 is connected through a resistor 65 to + polarity battery charging contact 30. A resistor 66 is connected between the collector of transistor 64 and circuit ground. When charge current flows in the battery charging circuit, the resulting voltage drop across resistor 56 biases transistor 64 on, thereby allowing the positive polarity battery charging current signal to be applied through the transistor 64 to the charge sense input terminal of the microprocessor. When battery charge current is not present, transistor 64 is turned off with the result that the microprocessor charge sense input terminal is biased low by resistor 66. When the passage of charge current is thus detected, the charge sense signal applied to the microprocessor signals the microprocessor to generate in a known manner an enable signal which is applied to the address code generator 62 through an enable line 67.

The address code generator 62 produces an appropriate string of data bits in response to the code stored within ROM 54. To this end, the data outputs of the ROM 54 are applied to input terminals of the address code generator 62 in parallel form. The address code generator converts the ID code information into a serial string of information bits which, when applied through resistor 60 to the base of transistor 58, controls the passage of charge current through transistor 55 in accordance with the pulse string thus generated to produce the modulated battery charging current.

To recover the address code information carried on the modulated battery charging current, the portable unit 12 includes a resistor 68 connected between the positive polarity contact 25 and circuit ground. When battery charging current is applied to the portable unit through contact 25, the battery charge voltage appears across the resistor 68. When charge current is removed, voltage across the resistor falls to zero. Thus, the voltage developed across the resistor varies in response to modulation of the battery charging current. This signal, when applied to input circuit 45 through data input line 70, is stored in address code register 46.

In the circuit described, the base unit microprocessor 51 provides an enable signal 67 to the address code generator 62 whenever a charge sense signal generated by transistor 64 is applied to the charge sense input of the microprocessor. Thus, so long as battery charging current passes to the portable unit, the charging current will be repetitively modulated by the ID code data string. Accordingly, it is necessary to signal the portable unit circuitry when a completed data string has been received and is thus suitable for storage in the address code register. To this end, the address code generator 62 is arranged to generate data words each consisting of a fixed number of bits, and adapted to carry synchronization information as well as address code data. For example, in the system described, a 25 bit word is used to carry information between the base and portable units. Of these bits, the first 5 are synchronizing bits, and the last 20 bits carry the ID code information.

When enabled, the address code generator 62

produces a unique 5-bit sequence at the beginning of each word. In the portable unit 15, the input circuit 45 is arranged to recognize the unique 5-bit synchronization sequence. When this sequence is recognized, the previously mentioned reset pulse is applied to the address code register, thereby erasing the contents previously stored therein, and conditioning the register to accept and retain the immediately following 20 bits containing the address code information. When the 20 address code bits have been received and applied to the address code register 46, the input circuit 45 provides a transfer signal to the address code register along the transfer line 48 which causes the register to transfer the address code information to the portable unit microprocessor 52. Upon subsequent receipt of the appropriate 5-bit synchronization sequence, the cycle begins anew.

In actual practice, because of the relatively long time constants involved, a relatively slow data transfer rate is preferably utilized. By way of example, a rate of one bit per second is adequate to reliably transfer ID code information from the base unit for encoding the portable unit. Since one to two hours are typically required to fully charge the portable unit's battery, sufficient time to transfer the ID code many times over is available despite the relatively slow data transfer rate. To improve charging efficiency, the code may be transferred to the portable unit on a periodic rather than continuous basis. For example, the system may be adjusted to transfer the code once every fifteen minutes thereby increasing the effective charge rate. The base station, once enabled, will continue to cycle the code modulation until the portable unit is removed from charge.

While the address code generator 62 and microprocessor 51 of the base unit are illustrated as separate circuits, it will be appreciated by those skilled in the art that a single microprocessor, suitably programmed, could perform the function of the address code generator in accepting serial or parallel ID code information from memory, generating the required synchronization code sequence and serially applying the ID code word through the resistor to the base of transistor. Similarly, within the portable unit, a single, suitably programmed microprocessor could perform the functions of the input circuit and address code register. Additionally, it will be appreciated that formats other than the 25 bit word discussed herein could be utilized without requiring any modification of the modulating and demodulating portions of the circuit. Furthermore, circuitry of a configuration other than that described herein could equally well perform the function of interrupting the battery charging current in response to the data bit string produced by the address code register.

While for illustrative purposes the invention has been described in conjunction with a cordless telephone system, it will be appreciated that the technique of modulating and demodulating battery charge current supplied by a base station unit to a battery operated portable unit for storage therein may be adapted to any such system wherein a battery operated portable unit, recharged by being periodically electrically mated with the base station unit, subsequently communicates with the base unit from a remote location. For example, a portable garage door opener, stored and recharged by being placed in a suitable socket of the receiver unit might equally well employ an encoding system of the type described herein.

Claims

1. A communication system (10), comprising:

a battery operated portable unit (12) including a rechargeable battery (38);

a base station unit (11) selectively in communication with said battery operated portable unit and comprising a charging apparatus having a receptacle (17) for selectively receiving said battery operated portable unit and having a source of battery charging current (40, 55, 56) said charging apparatus and battery operated portable unit being separable;

contacts (25, 26) and (30, 31) on said battery operated portable unit and within said receptacle for establishing electrical communication between said battery and said source of battery charging current;

said system characterized by:

means (62, 51, 58, 40, 55) in at least one of said base station unit and said battery operated portable unit for sending information signals by modulated charging current between said battery operated portable unit and said base station unit via said battery charging electrical communication contacts (30, 25, 31, 26) on said battery operated portable unit and said receptacle; and

means (68, 44, 52) in another of said base station unit and said battery operated portable unit for retrieving said sent information signals and for utilization thereof.

2. A communication system according to claim 1 wherein a code stored in the base station unit (11) is compared with an assigned code stored in the battery operated portable unit (12) for enabling effective message transmission between said base station unit and said battery operated portable unit and wherein said information signals sent from said base station unit to said battery operated portable unit are

determined in accordance with said code stored in the base station unit and said sent information signals retrieved by said battery operated portable unit are used to determine said assigned code of the battery operated portable unit, said assigned code being stored in the battery operated portable unit.

3. A communication system according to claim 1 or 2 wherein said means for sending information comprises modulating means (51, 62, 58) for modulating the charging current in accordance with said information signals, said means for retrieving comprising demodulating means (44, 52) for demodulating the modulated charging current to retrieve the information signals contained thereon.

4. A communication system as defined in claim 3 further comprising means for sensing the flow of charging current, said sensing means (66, 64) providing an enable signal in response to the flow of charging current for enabling said modulating means.

5. A communication system as defined in claim 3 wherein said modulating means interrupt the charging current in accordance with the information signals.

6. A communication system as defined in claim 2 wherein said base station unit and said battery operated portable unit each include apparatus (34-37) for establishing a wireless communication link therebetween for message transmission, the establishment of said link being in response to effective comparison of said code stored in said base station unit with said assigned code stored in said battery operated portable unit.

7. A communication system as defined in claim 3 wherein said modulating means is automatically enabled in response to sensing the establishment of electrical communication (at 30-25, 31-26) between the base station unit and battery operated portable unit.

8. A battery operated portable unit, including a rechargeable battery, for use in an electronic message transmission system of the type having a base station unit selectively in communication with said battery operated portable unit and comprising a charging apparatus having a receptacle for selectively receiving said battery operated portable unit and having a source of battery charging current (40, 55, 56), contacts (25, 26) on said battery operated portable unit and contacts (30, 31) within said receptacle establishing electrical communication between said battery operated portable unit and said source of battery charging current, said charging apparatus and battery operated portable unit being separable, said battery operated portable unit characterized by:

means (44) for retrieving information signals sent from said base station unit by modulated charging current via said battery charging electrical communication contacts (25, 26, 30, 31) and for storing corresponding signals in the battery operated portable Unit.

9. A battery operated portable unit according to claim 8 wherein a code stored in the base station unit is compared with an assigned code stored in the battery operated portable unit for enabling effective message transmission between said base station unit and said battery operated portable unit and wherein said information signals sent from said base station unit to said battery operated portable unit are determined in accordance with said code stored in the base station unit and said sent information signals retrieved by said battery operated portable unit retrieving and storing means are used to determine said assigned code of the battery operated portable unit.

10. A battery operated portable unit according to claim 8 or 9 wherein the base station unit sends said information signals to said battery operated portable unit by modulating the charging current in accordance with said information signals, and the retrieving means of said battery operated portable unit comprises demodulating means (68, 45) in circuit relationship with said modulated charging current for demodulating said modulated charging current to retrieve said information signals carried thereon.

11. A battery operated portable unit as defined in claim 9 further including wireless communication apparatus (35, 37) for communicating between the battery operated portable unit and said base station unit at least in response to the effective comparison of said code stored in said base station unit with said assigned code stored in said battery operated portable unit.

12. A battery operated portable unit according to claim 8 wherein said battery operated portable unit is a telephone handset.

13. A base station unit (11) for use in an electronic message transmission system of the type hav-

ing a battery operated portable unit including a rechargeable battery, and in which the base station unit is selectively in communication with said battery operated portable unit, said base station unit comprising a charging apparatus having a receptacle for selectively receiving said battery operated portable unit and having a source of battery charging current (40, 55, 56), contacts (25, 26) on said battery operated portable unit and contacts (30, 31) within said receptacle establishing electrical communication between said battery operated portable unit and said source of battery charging current, said base station unit characterized by:

means (51, 62, 58) for sending information signals by modulated charging current to said battery operated portable unit via said battery charging electrical communication contacts (25, 26, 30, 31) on said battery operated portable unit and said receptacle, said battery operated portable unit retrieving and utilising the sent information signals.

14. A base station unit according to claim 13 wherein a code stored in the base station unit is compared with an assigned code stored in the battery operated portable unit for enabling effective message transmission between said base station unit and said battery operated portable unit and wherein said information signals sent from said base station unit to said battery operated portable unit are determined in accordance with said code stored in the base station unit and said sent information signals retrieved by said battery operated portable unit are used to determine said assigned code of the battery operated portable unit.

15. A base station unit according to claim 13 or 14 wherein said means for sending comprises modulating means (51, 62, 58) for modulating said charging current in accordance with said informations signals whereby said information signals carried on said charging current is retrieved by said battery operated portable unit by demodulating said modulated charging current.

16. A base station unit as defined in claim 14 which includes wireless communication apparatus (34, 36) for communicating between said base station unit and battery operated portable unit in response to at least the effective comparison of said code stored in said base station unit with said assigned code stored in said battery operated portable unit.

17. A base station unit as defined in claim 15 wherein said modulating means is automatically enabled by sensing the establishment of electrical communication between the base station unit and battery operated portable unit.

18. A method for sending information signals to a battery operated portable unit used in an electronic message transmission system of the type having a base station unit which is selectively in communication with said battery operated portable unit, said base station unit comprising a charging apparatus having a receptacle for selectively receiving said battery operated portable unit and having a source of battery charging current (40, 55, 56), contacts (25, 26) on said battery operated portable unit and contacts (30, 31) within said receptacle establishing electrical communication between said battery operated portable unit and said source of battery charging current, said method comprising the steps of:

establishing electrical communication between the battery operated portable unit and said base station unit via said battery charging electrical contacts (25, 26, 30, 31);

applying a battery charge current provided by the base station unit to the battery operated portable unit, said method characterised by the steps of:

sending information signals by modulated charging current determined in accordance with signals stored in said base station unit to said battery operated portable unit via said battery charging electrical contacts (25, 26, 30, 31);

retrieving the information signals sent from said base station unit; and

storing signals determined in accordance with the retrieved information signals in the battery operated portable unit.

19. A method according to claim 18 wherein a code stored in the base station unit (11) is compared with an assigned code stored in the battery operated portable unit (12) for enabling effective message transmission between said base station unit and said battery operated portable unit, and said information signals are code signals determined in accordance with said code stored in said base station unit, said sending step comprising the step of sending the code signals from the base station unit to the battery operated portable unit and said retrieving step comprises determining said assigned code from the code signals sent from the base station unit.

20. A method according to claim 18 or 19 wherein said sending step comprises the step of modulating the charge current in accordance with the information signals stored in the base station unit and said retrieving step comprises the step of demodulating the charge current to retrieve the information signals transmitted thereon.

21. A method as defined in claim 20 wherein the charge current is modulated by means of interrupting the charge current in accordance with the information signals stored in the base station unit.

22. A method as defined in claim 20 wherein the method further comprises the step of sensing the passage of charging current to the battery operated portable unit and allowing said modulation of the charging current in response thereto.

23. A method as defined in claim 19 wherein the method further comprises the steps of:

converting the code stored in the base station unit to form a word, said word comprising a series of logic bits, each of said logic bits being in one or the other of two states whereby each unique code stored in the base station unit results in the formation of a unique series of logic bits; and

modulating the charge current in accordance with said word thus formed, said modulation comprising applying charge current in response to each bit of one state of said two states and interrupting the charge current in response to each bit of the other state of said two states whereby each unique code stored in the base station unit results in a unique sequence of application and interruption of the charge current provided by the base station unit.

24. A method as defined in claim 23 wherein said word further includes a series of synchronization logic bits for signaling the beginning or end of said word thus formed.

25. A method as defined in claim 19 which includes the step of establishing a wireless communication link between said base station unit and battery operated portable units, the establishing of said link being in response to effective comparison of said code stored in said base station unit with said assigned code stored in said battery operated portable unit.

Patentansprüche

1. Kommunikationssytem (10), enthaltend:

eine batteriebetriebene, tragbare Einheit (12), die eine aufladbare Batterie (38) enthält;

eine Basisstationseinheit (11), die wahlweise mit der batteriebetriebenen, tragbaren Einheit kommuniziert und ein Aufladegerät enthält, das einen Behälter (17) hat zum wahlweisen Aufnehmen der batteriebetriebenen, tragbaren Einheit und das eine Batterieaufladestromquelle (40, 55, 56) hat, wobei das Aufladegerät und die batteriebetriebene, tragbare Einheit voneinander trennbar sind;

Kontakte (25, 26) und (30, 31) an der batteriebetriebenen, tragbaren Einheit und innerhalb des Behälters, zum Aufbauen einer elektrischen Verbindung zwischen der Batterie und der Batterieaufladestromquelle;

wobei das System gekennzeichnet ist durch:

Einrichtungen (62, 51, 58, 40, 55) in wenigstens einer der Basisstationseinheit und der batteriebetriebenen, tragbaren Einheit, zum Senden von Informationssignalen durch modulierten Ladestrom zwischen der batteriebetriebenen, tragbaren Einheit und der Basisstationseinheit über die batterieaufladenden elektrischen Verbindungskontakte (30, 25, 31, 26) an der batteriebetriebenen, tragbaren Einheit und dem Behälter; und

Einrichtungen (68, 44, 52) in einer weiteren Basisstationseinheit und der batteriebetriebenen, tragbaren Einheit zum Rückgewinnen der gesendeten Informationssignale und zu deren Verwendung.

2. Kommunikationssystem nach Anspruch 1, worin ein Code, der in der Basisstationseinheit (11) gespeichert ist, mit einem zugewiesenen Code verglichen wird, der in der batteriebetriebenen, tragbaren Einheit (12) gespeichert ist, zum Ermöglichen einer effektiven Nachrichtübertragung zwischen der Basisstationsseinheit und der batteriebetriebenen, tragbaren Einheit, und wobei die Informationssignale, die von der Basisstationseinheit an die batteriebetriebene, tragbare Einheit gesendet werden, in Übereinstimmung mit den Codes, die in der Basisstationseinheit gespeichert sind, bestimmt werden, und wobei die gesendeten Informationssignale, die durch die batteriebetriebene, tragbare Einheit rückgewonnen werden, dazu verwendet werden, den zugewiesenen Code der

batteriebetriebenen, tragbaren Einheit zu bestimmen, wobei der zugewiesene Code in der batteriebetriebenen, tragbaren Einheit gespeichert ist.

3. Kommunikationssystem nach Anspruch 1 oder 2, wobei die Einrichtung zum Senden von Informationen Modulationseinrichtungen (51, 62, 58) enthält, zum Modulieren des Ladestroms in Übereinstimmung mit den Informationssignalen, wobei die Einrichtung zum Rückgewinnen Demodulationseinrichtungen (44, 52) enthält zum Demodulieren des modulierten Ladestroms, um die Informationssignale rückzugewinnen, die darin enthalten sind.

4. Kommunikationssystem nach Anspruch 3, weiterhin enthaltend eine Einrichtung zum Abtasten des Ladestromflusses, wobei die Abtasteinrichtung (66, 64) ein Freigabesignal erzeugt in Reaktion auf den Ladestromfluß zum Freigeben der Modulationseinrichtung.

5. Kommunikationssystem nach Anspruch 3, wobei die Modulationseinrichtung den Ladestrom in Übereinstimmung mit den Informationssignalen unterbricht.

6. Kommunikationssystem nach Anspruch 2, wobei sowohl die Basisstationseinheit als auch die batteriebetriebene, tragbare Einheit beide Vorrichtungen (34 - 37) enthalten zum Bilden einer drahtlosen Kommunikationsverbindung zwischen beiden zur Nachrichtenübertragung, wobei die Bildung der Verbindung in Reaktion auf den effektiven Vergleich des Codes, der in der Basisstationseinheit gespeichert ist, mit dem zugewiesenen Code, der in der batteriebetriebenen, tragbaren Einheit gespeichert ist, stattfindet.

7. Kommunikationssystem nach Anspruch 3, wobei die Modulationseinrichtung automatisch in Reaktion auf das Abtasten der Bildung elektrischer Verbindung zwischen der Basisstationseinheit (bei 30 - 25, 31 - 26) und der batteriebetriebenen, tragbaren Einheit freigegeben wird.

8. Batteriebetriebene, tragbare Einheit, enthaltend eine aufladbare Batterie zur Verwendung in einem elektronischen Nachrichtenübertragungssystem von der Art, die eine Basisstationseinheit hat, die wahlweise mit der batteriebetriebenen, tragbaren Einheit kommuniziert und ein Ladegerät enthält, das einen Behälter hat zum wahlweisen Aufnehmen der batteriebetriebenen, tragbaren Einheit, und daß eine Batterieladestromqeulle (40, 55, 56) Kontakte (25, 26) auf der batteriebetriebenen tragbaren Einheit hat, und Kontakte (30, 31) innerhalb des Behälters, wodurch elektrische Kommunikation zwischen der batteriebetriebenen, tragbaren Einheit und der Batterieladestromquelle gebildet wird, wobei das Ladegerät und die batteriebetriebene, tragbare Einheit voneinenader trennbar sind, wobei die batteriebetriebene, tragbare Einheit gekennzeichnet ist durch:

eine Einrichtung (44) zur Rückgewinnung der Informationssignale, die von der Basisstationseinheit über die die Batterie ladenden, elektrischen Verbindungskontakte (25, 26, 30, 31) gesendet weden, und zum speichern entsprechender Signale in der batteriebetriebenen, tragbaren Einheit.

9. Batteriebetriebene, tragbare Einheit nach Anspruch 8, wobei ein Code, der in der Basisstationseinheit gespeichert ist, mit einem zugewiesenen Code vergleichen wird, der in der batteriebetriebenen, tragbaren Einheit gespeichert ist, zum Freigeben einer effektiven Nachrichtenübertragung zwischen der Basisstationseinheit und der batteriebetriebenen, tragbaren Einheit, und wobei die Informationssignale, die von der Basisstationseinheit an die batteriebetriebene, tragbare Einheit gesendet werden, in Übereinstimmung mit dem Code, der in der Basisstationseinheit gespeichert ist, verglichen wird, und wobei die Informationssignale, die durch die Rückgewinn- und speichereinrichtung der batteriebetriebenen, tragbaren Einheit rückgewonnen werden, dazu verwendet werden, den zugewiesenen Code der batteriebetriebenen, tragbaren Einheit zu bestimmen.

10. Batteriebetriebene, tragbare Einheit nach Anspruch 8 oder 9, wobei die Basisstationseinheit die Informationssignale an die batteriebetriebene, tragbare Einheit sendet durch Modulation des Ladestroms in Übereinstimmung mit den Informationssignalen, und wobei die Rückgewinneinrichtung der batteriebetriebenen, tragbaren Einheit Demodulationseinrichtungen (68, 45) in Schaltungsverhältnis zu dem modulierten Ladestrom zum Demodulieren des modulierten Ladestroms enthält, um die Informationssignale die darauf mitgeführt werden, rückzugewinnen.

11. Batteriebetriebene, tragbare Einheit nach Anspruch 9, weiterhin enthaltend ein drahtloses Kommunikationsgerät (35, 37) zum Kommunizieren zwischen der batteriebetriebenen, tragbaren Einheit und der Basisstationseinheit we-

nigstens in Reaktion auf den effektiven Vergleich des Codes, der in der Basisstationseinheit gespeichert ist, mit dem zugewiesenen Code, der in der batteriebetriebenen, tragbaren Einheit gespeichert ist.

12. Batteriebetriebene, tragbare Einheit nach Anspruch 8, wobei die batteriebetriebene, tragbare Einheit ein Hand-Telephon ist.

13. Basisstationseinheit (11) zur Verwendung bei einem elektronischen Nachrichtenübertragungssystem von der Art, die eine batteriebetriebene, tragbare Einrichtung hat, enthaltend eine aufladbare Batterie, und bei der die Basisstationseinheit wahlweise mit der batteriebetriebenen, tragbaren Einheit kommuniziert, wobei die Basisstationseinheit ein Ladegerät enthält, das einen Behälter hat zum wahlweisen Aufnehmen der batteriebetriebenen, tragbaren Einheit, und das eine Batterieladestromquelle (40, 55, 56) hat und Kontakte (25, 26) auf der batteriebetriebenen, tragbaren Einheit und Kontakte (30, 31) innerhalb des Behälters, der die elektrische Verbindung zwischen der batteriebetriebenen, tragbaren Einheit und der Batterieladestromquelle bildet, wobei die Basisstationseinheit gekennzeichnet ist durch:

Einrichtungen (51, 62, 58) zum Senden von Informationssignalen durch einen modulierten Ladestrom an die batteriebetriebene, tragbare Einheit über die batterieladenden elektrischen Verbindungskontakte (25, 26, 30, 31) an der batteriebetriebenen, tragbaren Einheit und den Behälter, wobei die batteriebetriebene, tragbare Einheit die gesendeten Informationssignale rückgewinnt und verwertet.

14. Basisstationseinheit nach Anspruch 13, wobei ein Code, der in der Basisstationseinheit gespeichert ist, mit einem zugewiesenen Code vergleichen wird, der in der batteriebetriebenen, tragbaren Einheit gespeichert ist, zum Freigeben einer effektiven Nachrichtenübertragung zwischen der Basisstationseinheit und der batteriebetriebenen, tragbaren Einheit, und wobei die Informationssignale, die von der Basisstationseinheit an die batteriebetriebene, tragbare Einheit gesendet werden, in Übereinstimmung mit dem Code, der in der Basisstrationseinheit gespeichert ist, bestimmt werden und die gesendeten Informationssignale, die durch die batteriebetriebene, tragbare Einhzeit rückgewonnen wurden, dazu verwendet werden, den zugewiesenen Code der batteriebetriebenen, tragbaren Einheit zu bestimmen.

15. Basisstationseinheit nach Anspruch 13 oder 14, wobei die Sendeeinrichtung Modulationseinrichtungen (51, 62, 58) enthält zum Modulieren des Ladestroms in Übereinstimmung mit den Informationssignalen, wobei die Informationssignale, die auf dem Ladestrom getragen werden, durch die batteriebetriebene, tragbare Einheit durch Demodulation des modulierten Ladestroms rückgewonnen werden.

16. Basisstationseinheit nach Anspruch 14, die ein kabelloses Kommunikationsgerät (34, 36) enthält, zur Kommunikation zwischen der Basisstationseinheit und der batteriebetriebenen, tragbaren Einheit in Reaktion auf wenigstens den effektiven Vergleich des Codes, der in der Basisstationseinheit gespeichert ist, mit dem zugewiesenen Code, der in der batteriebetriebenen, tragbaren Einheit gespeichert ist.

17. Basisstationseinheit nach Anspruch 15, wobei die Modulationseinrichtung automatisch freigegeben wird durch Ermittlung der Bildung der elektrischen Kommunikation zwischen der Basisstationseinheit und der batteriebetriebenen, tragbaren Einheit.

18. Verfahren zum Senden von Informationssignalen an eine batteriebetriebene, tragbare Einheit, die für ein elektronisches Nachrichtenübertragungssystem verwendet wird, von der Art, die eine Basisstationseinheit hat, die wahlweise mit der batteriebetriebenen, tragbaren Einheit kommuniziert, wobei die Basisstationseinheit ein Ladegerät enthält, das einen Behälter hat zu wahlweisen Aufnehmen der batteriebetriebenen, tragbaren Einheit und das eine Batterieladestromquelle (40, 55, 56) hat, Kontakte (25, 26) auf der batteriebetriebenen, tragbaren Einheit und Kontakte (30, 31) innerhalb des Behälters, die die elektrische Verbindung zwischen der batteriebetriebenen, tragbaren Einheit und der Batterieladequelle herstellen, wobei das Verfahren folgende Schritte enthält:

Herstellen einer elektrischen Verbindung zwischen der batteriebetriebenen, tragbaren Einheit und der Basissstationseinheit über die batterieaufladenden elektrischen Kontakte (25, 26, 30, 31);

Anlegen eines Batterieladestroms, der durch die Basisstationseinheit an die batteriebetriebene, tragbare Einheit geliefert wird, wobei das Verfahren durch folgende Schritte gekennzeichnet ist:

Senden von Informationssignalen durch modu-

lierten Ladestrom, der in Übereinstimmung mit den Signalen bestimmt wird, die in der Basisstationseinheit gespeichert sind, an die batteriebetriebene, tragbare Einheit über die batterieaufladenden elektrischen Kontakte (25, 26, 30, 31);

Rückgewinnen der Informationssignale, die von der Basisstationseinheit gesendet werden; und

Speichern der Signale, die in Übereinstimmung mit den rückgewonnenen Informationssignalen bestimmt werden, die in der batteriebetriebenen, tragbaren Einheit gespeichert sind.

19. Verfahren nach Anspruch 18, wobei ein Code, der in der Basisstationseinheit (11) gespeichert ist, mit einem zugewiesenen Code verglichen wird, der in der batteriebetriebenen, tragbaren Einheit (12) gespeichert ist, zum Freigeben effektiver Nachrichtenübertragung zwischen der Basissstationseinheit und der batteriebetriebenen, tragbaren Einheit, und wobei die Informationssignale Codesignale sind, die in Übereinstimmung mit dem Code bestimmt werden, der in der Basisstationseinheit gespeichert ist, wobei der Sendeschritt den Schritt des Sendens der Codesignale von der Basisstationseinheit zur batteriebetriebenen, tragbaren Einheit beinhaltet, und wobei der Rückgewinnungsschritt das Bestimmen des zugewiesenen Codes aus den Codesignalen beinhaltet, die von der Basisstationseinheit gesendet werden.

20. Verfahren nach Anspruch 18 oder 19, wobei der Sendeschritt den Schritt des Modulierens des Ladestroms in Übereinstimmung mit den Informationssignalen beinhaltet, die in der Basisstationseinheit gespeichert sind, und wobei der Rückgewinnungsschritt den Schritt des Demodulierens des Ladestroms beinhaltet, um die Infromationssignale, die darauf übertragen werden, wiederzugewinnen.

21. Verfahren nach Anspruch 20, wobei der Ladestrom durch Unterbrechung des Ladestroms in Übereinstimmung mit den Informationssignalen, die in der Basisstationseinheit gespeichert sind, moduliert wird.

22. Verfahren nach Anspruch 20, wobei das Verfahren weiterhin den Schritt des Abtastens des Ladestromflusses zur batteriebetriebenen, tragbaren Einheit enthält, und die Modulation des Ladestroms in Reaktion darauf zuläßt.

23. Verfahren nach Anspruch 19, wobei das verfahren weiterhin folgende Schritte enthält:

Umwandeln des Codes, der in der Basisstationseinheit gespeichert ist, in ein Wort, das eine Serie logischer Bits enthält, wobei jedes Bit entweder in dem einen oder dem anderen Zustand ist, wodurch jeder einzelne Code, der in der Basisstationseinheit gespeichert ist, die Bildung einer einzigartigen Serie logischer Bits zur Folge hat; und

Modulieren des Ladestroms in Übereinstimmung mit dem so gebildeten Wort, wobei die Modulation das Anlegen von Ladestrom in Reaktion auf jedes Bit in einem der zwei Zustände enthält, und das Unterbrechen das Ladestroms in Reaktion auf jedes Bit des anderen Zustandes der zwei Zustände, wodurch jeder einzelne Code, der in der Basisstationseinheit gespeichert ist, eine einzelne Sequenz von Anlegen und Unterbrechen des Ladestroms zur Folge hat, der von der Basisstationseinheit erzeugt wird.

24. Verfahren nach Anspruch 23, wobei das Wort weiterhin eine Reihe von Synchronisationslogikbits zum Signalisieren des Anfangs und des Endes jedes dadurch gebildeten Wortes enthält.

25. Verfahren nach Anspruch 19, das den Schritt des Bildens einer drahtlosen Kommunikationsverbindung zwischen der Basisstationseinheit und der batteriebetriebenen, tragbaren Einheiten enthält, wobei das Bilden der Verbindung in Reaktion auf den effektiven Vergleich des Codes, der in der Basisstationseinheit gespeichert ist, mit dem zugewiesenen Code, der in der batteriebetriebenen, tragbaren Einheit gespeichert ist, geschieht.

Revendications

1. Système de télécommunications (10) comportant :

une unité portative (12) alimentée par batterie, comprenant une batterie rechargeable (38) ;

une unité de poste de base (11) en communication sélectivement avec ladite unité portative alimentée par batterie et comportant un appareil de charge ayant une prise femelle (17) pour recevoir sélectivement ladite unité portative alimentée par batterie et comprenant une source de courant de charge de batterie (40, 55, 56) ledit appareil de charge et l'unité portative alimentée par batterie pouvant être séparés ;

des contacts (25, 26) et (30, 31) sur ladite unité portative alimentée par batterie et dans ladite prise femelle pour établir une communication électrique entre ladite batterie et ladite source de courant de charge de batterie ;

ledit système étant caractérisé par :

un dispositif (62, 51, 58, 40, 55) dans l'une au moins de ladite unité de poste de base et de ladite unité portative alimentée par batterie, pour émettre des signaux d'informations par un courant de charge modulé entre ladite unité portative alimentée par batterie et ladite unité de poste de base, par l'intermédiaire desdits contacts de communication électrique de charge de batterie (30, 25, 31, 26) sur ladite unité portative alimentée par batterie et ladite douille femelle ; et

un dispositif (68, 44, 52) dans une autre de ladite unité de poste de base et de ladite unité portative alimentée par batterie pour retrouver lesdits signaux d'informations émis et pour les utiliser.

2. Système de télécommunications selon la revendication 1, dans lequel un code mémorisé dans l'unité de poste de base (11) est comparé avec un code affecté mémorisé dans l'unité portative alimentée par batterie (12) pour permettre une transmission effective d'un message entre ladite unité de poste de base et ladite unité portative alimentée par batterie et dans lequel lesdits signaux d'informations émis par ladite unité de poste de base vers ladite unité portative alimentée par batterie sont déterminés en fonction dudit code mémorisé dans ladite unité de poste de base et lesdits signaux d'informations émis retrouvés par ladite unité portative alimentée par batterie sont utilisés pour déterminer ledit code affecté de l'unité portative alimentée par batterie, ledit code affecté étant mémorisé dans l'unité portative alimentée par batterie.

3. Système de télécommunications selon la revendication 1 ou 2, dans lequel ledit dispositif destiné à émettre des informations consiste en un dispositif de modulation (51, 62, 58) destiné à moduler le courant de charge en fonction desdits signaux d'informations, ledit dispositif destiné à retrouver les signaux comprenant un dispositif de démodulation (44, 52) destiné à démoduler le courant de charge modulé afin de retrouver les signaux d'informations qu'il contient.

4. Système de télécommunications selon la revendication 3, comportant en outre un dispositif destiné à détecter la circulation d'un courant de charge, ledit dispositif de détection (66, 64) produisant un signal d'autorisation en réponse à la circulation d'un courant de charge, pour autoriser ledit dispositif de modulation.

5. Système de télécommunications selon la revendication 3, dans lequel ledit dispositif de modulation interrompt le courant de charge en fonction des signaux d'informations.

6. Système de télécommunications selon la revendication 2, dans lequel ladite unité de poste de base et ladite unité portative alimentée par batterie comportent chacune un appareil (34-37) destiné à établir une liaison de communications sans fil entre elles pour la transmission d'un message, l'établissement de ladite liaison se faisant en réponse à une comparaison effective dudit code mémorisé dans ladite unité de poste de base avec ledit code affecté mémorisé dans ladite unité portative alimentée par batterie.

7. Système de télécommunications selon la revendication 3, dans lequel ledit dispositif de modulation est autorisé automatiquement en réponse à la détection de l'établissement d'une communication électrique (en 30-25, 31-26) entre ladite unité de poste de base et ladite unité portative alimentée par batterie.

8. Unité portative alimentée par batterie, comprenant une batterie rechargeable pour son utilisation dans un système de transmission de message électronique du type comprenant une unité de poste de base en communication sélectivement avec ladite unité portative alimentée par batterie et comportant un appareil de charge ayant une douille femelle pour recevoir sélectivement ladite unité portative alimentée par batterie et ayant une source de courant de charge de batterie (40, 55, 56), des contacts (25, 26) sur ladite unité portative alimentée par batterie et des contacts (30, 31) dans ladite prise femelle établissant une communication électrique entre ladite unité portative alimentée par batterie et ladite source de courant de charge de batterie, ledit appareil de charge et l'unité portative alimentée par batterie pouvant être séparés, ladite unité portative alimentée par batterie étant caractérisée par :

un dispositif (44) destiné à retrouver des signaux d'informations émis par ladite unité de poste de base par l'intermédiaire des contacts de communication électrique de charge de batterie (25, 26, 30, 31) et pour mémoriser des signaux correspondants dans l'unité portative alimentée par batterie.

9. Unité portative alimentée par batterie selon la revendication 8, dans laquelle un code mémorisé dans l'unité de poste de base est comparé avec un code affecté mémorisé dans ladite unité portative alimentée par batterie pour autoriser la transmission effective d'un message entre ladite unité de poste de base et ladite unité portative alimentée par batterie et dans laquelle lesdits signaux d'informations émis par ladite unité de poste de base vers ladite unité portative alimentée par batterie sont déterminés en fonction dudit code mémorisé dans ladite unité de poste de base et lesdits signaux d'informations émis retrouvés par ledit dispositif destiné à retrouver et à mémoriser dans ladite unité portative alimentée par batterie sont utilisés pour déterminer ledit code affecté de ladite unité portative alimentée par batterie.

10. Unité portative alimentée par batterie selon la revendication 8 ou 9, dans laquelle ladite unité de poste de base émet lesdits signaux d'informations vers ladite unité portative alimentée par batterie en modulant le courant de charge en fonction desdits signaux d'informations et le dispositif destiné à retrouver les informations dans ladite unité portative alimentée par batterie comporte un dispositif de démodulation (68, 45) en relation de circuits avec ledit courant de charge modulé pour démoduler ledit courant de charge modulé afin de retrouver lesdits signaux d'informations qu'il porte.

11. Unité portative alimentée par batterie selon la revendication 9, comportant en outre un appareil de communication sans fil (35, 37) pour communiquer entre ladite unité portative alimentée par batterie et ladite unité de poste de base, au moins en réponse à la comparaison effective dudit code mémorisé dans ladite unité de poste de base avec ledit code affecté mémorisé dans ladite unité portative alimentée par batterie.

12. Unité portative alimentée par batterie selon la revendication 8, dans laquelle ladite unité portative alimentée par batterie est un combiné téléphonique.

13. Unité de poste de base (11) destiné à être utilisée dans un système de transmission de messages électroniques du type comprenant une unité portative alimentée par batterie comprenant une batterie rechargeable et dans laquelle l'unité de poste de base est sélectivement en communication avec ladite unité portative alimentée par batterie, ladite unité de poste de base comportant un appareil de charge ayant une douille femelle pour recevoir sélectivement ladite unité portative alimentée par batterie et ayant une source de courant de charge de batterie (40, 55, 56), des contacts (25, 26) sur ladite unité portative alimentée par batterie et des contacts (30, 31) dans ladite prise femelle établissant une communication électrique entre ladite unité portative alimentée par batterie et ladite source de courant de charge, ladite unité de poste de base étant caractérisée par :

un dispositif (51, 62, 58) destiné à émettre des signaux d'informations par un courant de charge modulé vers ladite unité portative alimentée par batterie, par l'intermédiaire desdits contacts de communication électrique de charge de batterie (25, 26, 30, 31) sur ladite unité portative alimentée par batterie et ladite douille femelle, ladite unité portative alimentée par batterie retrouvant et utilisant les signaux d'informations émis.

14. Unité de poste de base selon la revendication 13, dans laquelle un code mémorisé dans ladite unité de poste de base est comparé avec un code affecté mémorisé dans l'unité portative alimentée par batterie pour permettre une transmission effective de messages entre ladite unité de poste de base et ladite unité portative alimentée par batterie et dans laquelle lesdits signaux d'informations émis par ladite unité de poste de base vers ladite unité portative alimentée par batterie sont déterminés en fonction dudit code numérisé dans l'unité de poste de base et lesdits signaux d'informations émis retrouvés par ladite unité portative alimentée par batterie sont utilisés pour déterminer ledit code affecté de l'unité portative alimentée par batterie.

15. Unité de poste de base selon la revendication 13 ou 14, dans laquelle ledit dispositif d'émission comporte un dispositif de modulation (51, 62, 58) destiné à moduler ledit courant de charge en fonction desdits signaux d'informations, de manière que lesdits signaux d'informations supportés par ledit courant de charge soient retrouvés par ladite unité portative alimentée par batterie par démodulation dudit courant de charge modulé.

16. Unité de poste de base selon la revendication 14, comprenant un appareil de communication sans fil (34, 36) destiné à communiquer entre ladite unité de poste de base et ladite unité portative alimentée par batterie en réponse à au moins la comparaison effective dudit code mémorisé dans ladite unité de poste de base

avec ledit code affecté mémorisé dans ladite unité portative alimentée par batterie.

17. Unité de poste de base selon la revendication 15, dans laquelle ledit dispositif de modulation est autorisé automatiquement par la détection de l'établissement d'une communication électrique entre ladite unité de poste de base et ladite unité portative alimentée par batterie.

18. Procédé d'émission de signaux d'informations vers une unité portative alimentée par batterie dans un système de transmission de messages électroniques du type comprenant une unité de poste de base qui communique sélectivement avec ladite unité portative alimentée par batterie, ladite unité de poste de base comportant un appareil de charge avec une douille femelle pour recevoir sélectivement ladite unité portative alimentée par batterie et comprenant une source de courant de charge de batterie (40, 55, 56) des contacts (25, 26) sur ladite unité portative alimentée par batterie et des contacts (30, 31) dans ladite douille femelle établissant une communication électrique entre ladite unité portative alimentée par batterie et ladite source de courant de charge de batterie, ledit procédé consistant :

à établir une communication électrique entre ladite unité portative alimentée par batterie et ladite unité de poste de base par l'intermédiaire desdits contacts électriques de charge de batterie (25, 26, 30, 31) ;

à appliquer un courant de charge de batterie produit par l'unité de poste de base à l'unité portative alimentée par batterie, ledit procédé étant caractérisé en ce qu'il consiste essentiellement :

à émettre des signaux d'informations déterminés en fonction de signaux mémorisés dans ladite unité de poste de base vers ladite unité portative alimentée par batterie, par l'intermédiaire des contacts électriques de charge de batterie (25, 26, 30, 31) ;

à retrouver les signaux d'informations émis par ladite unité de poste de base ; et

à mémoriser les signaux déterminés en fonction des signaux d'informations retrouvés dans l'unité portative alimentée par batterie.

19. Procédé selon la revendication 18, dans lequel un code mémorisé dans l'unité de poste de base (11) est comparé avec un code affecté mémorisé dans l'unité portative alimentée par batterie (12) pour permettre une transmission efficace d'un message entre ladite unité de poste de base et ladite unité portative alimentée par batterie et lesdits signaux d'informations sont des signaux de code déterminés en fonction dudit code mémorisé dans ladite unité de poste de base, ladite opération d'émission consistant à émettre les signaux de code de l'unité de poste de base vers ladite unité portative alimentée par batterie et ladite opération consistant à retrouver consistant à déterminer ledit code affecté à partir des signaux de code émis par ladite unité de poste de base.

20. Procédé selon la revendication 18 ou 19, dans lequel ladite opération d'émission consiste à moduler le courant de charge en fonction des signaux d'informations mémorisés dans ladite unité de poste de base et ladite opération consistant à retrouver consistant à démoduler le courant de charge pour retrouver les signaux d'informations qui lui sont émis

21. Procédé selon la revendication 20, dans lequel le courant de charge est modulé en interrompant ce courant de charge en fonction des signaux d'informations mémorisés dans l'unité de poste de base.

22. Procédé selon la revendication 20, dans lequel le procédé consiste en outre à émettre le passage d'un courant de charge vers l'unité portative alimentée par batterie et à permettre la démodulation du courant de charge en réponse à cette détection.

23. Procédé selon la revendication 19, dans lequel le procédé consiste en outre :

à convertir le code mémorisé dans l'unité de poste de base pour former un mot, ledit mot comprenant une série de bits logiques, chacun desdits bits logiques étant dans l'un ou l'autre de deux états de manière que chaque code unique mémorisé dans ladite unité de poste de base résulte dans la formation d'une série unique de bits logiques ; et

à moduler le courant de charge en fonction dudit mot ainsi formé, ladite modulation consistant à appliquer le courant de charge en réponse à chaque bit d'un état desdits deux états et à interrompre le courant de charge en réponse à chaque bit de l'autre état desdits deux états de manière que chaque code unique mémorisé dans l'unité de poste de base résulte en une séquence unique d'application et d'interruption du courant de charge, produites par ladite unité de poste de base.

24. Procédé selon la revendication 23, dans lequel ledit mot comporte en outre une série de bits logiques de synchronisation pour signaler le début ou la fin dudit mot ainsi formé.

25. Procédé selon la revendication 19, consistant en outre à établir une liaison de communication sans fil entre ladite unité de poste de base et ladite unité portative alimentée par batterie, l'établissement de ladite liaison se faisant en réponse à la comparaison effective dudit code mémorisé dans ladite unité de poste de base avec ledit code affecté mémorisé dans ladit unité portative alimentée par batterie.

FIG. 1

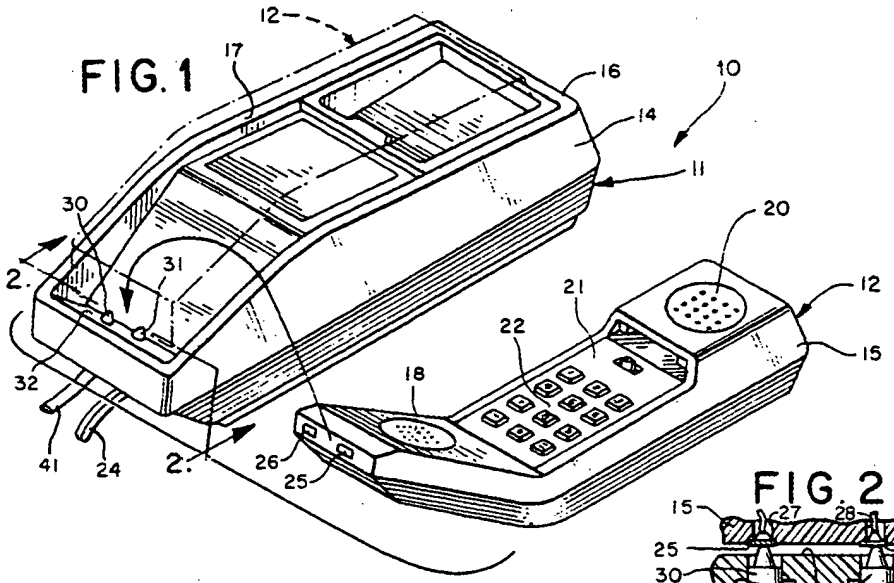

FIG. 2

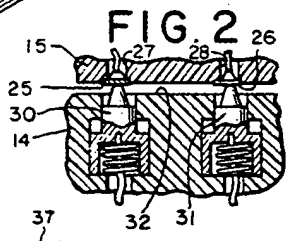

FIG. 3